MELVIN V. KOCH, Ph.D.

Residence: [redacted]

Business: [redacted]

PROFILE

Coordinator, Technical Leader and Director of research organizations with a multi-discipline make-up, particularly with the Chemical and Pharmaceutical industries. Demonstrated expertise in creating an environment to allow individuals to optimize their performance through teamwork in achieving Strategic Objectives.

Effectively worked across functional (research, manufacturing, and business), external (government, university, and other industry), and geographic (North America, Europe, Pacific, and Latin America) boundaries by creating networks partnering strategies.

Recognized expert in the development of technology and technology transfer, resulting in moving laboratory developments into commercialization.

Developed strong interactive ties with Industry, universities, National laboratories, and national agencies.

EDUCATIONAL BACKGROUND

Ph.D.	Organic Medicinal Chemistry	University of Iowa	1967
MS	Biochemistry	University of Iowa	1964
BA	Chemistry/Math/Economics	St. Olaf College, Minnesota	1962
	International Summer School	University of Oslo, Norway	1960

CAREER HISTORY

1995-Present THE UNIVERSITY OF WASHINGTON, Seattle, Washington

Director, Center for Process Analytical Chemistry (1997- Present)
Affiliate Professor of Chemical Engineering (1997- Present)
Interactive Program Director and Associate Faculty Director (1995-1997)

- Direct efforts to move a successful center of technology to a higher level of national recognition.
- Develop methods to prioritize key needs of industry in the process analytical field.
- Launch initiatives that respond to needs of industry in the areas of sampling, high throughput experimentation, data handling on-line, fermentation monitoring.

- Develop and organize Summer Institutes (1996-present) to bring together measurement scientists and process control engineers in a brainstorming format to discuss recent advances in measurement technology relative to engineering needs.

- Coordinate curriculum changes for engineering courses to incorporate new technology on sensors and process control.

1967-1995 THE DOW CHEMICAL COMPANY, Midland, Michigan

Analytical Sciences, Core Research & Development
Global Director, 1992-1995

- Organized globalization efforts across 50 Dow sites, which involved:
  - Matching technical capabilities with business needs
  - Technology exchange between sites to maximize seamless approach to solve problems
  - Implementing process for effective outsourcing of routine problems.
- Conducted benchmarking and partnering between company sites, within industry, and across universities and Government for internal operation improvements and leveraging of research.
- Initiated an alliance with the Perkin Elmer instrument company to effectively commercialize internal research developments in the field of process analytical chemistry.

Analytical Sciences Laboratory
Laboratory Director/Global Coordinator, 1981-1992

- Managed the design and construction of a 140,000 square foot facility that united 240 researchers from 5 locations into an interactive structure that is recognized as one of the best facilities for analytical chemistry in the world. This effort demonstrated teamwork, productivity, and the use of Good Laboratory Practices.
- Established a global network for technology exchange, based on the various areas (15) of analytical technology (i.e., mass spectroscopy, liquid chromatography, etc.). This resulted in periodic meetings to advance the technology internally and to assess the status of external research.

CAREER HISTORY (Cont.)

Organic Chemicals, New Products Research
Senior Research Manager, 1980-1981

- Structured a group of chemists to carry out discovery work on new organic compounds.

Dow-Lepetit, Pharmaceutical Process Research
Research Manager, Milan, Italy, 1977-1980
Group Leader, Midland, Michigan, 1974-1977

Helped Dow position itself to aggressively enter the global Pharmaceutical business.

- Contributed significantly to the successful pharmaceutical business by pulling together resources (chemists, engineers, pilot plants) to conduct process research in a multinational mode.
- Formed a new group of researchers and built pilot plant facilities.
- Directed an effort that involved 75 researchers and pilot plant facilities at 3 locations in Italy, while interacting with other locations across Europe.

Process Research
Research Chemist, 1967-1974

- Conducted process research in Agricultural and Specialty Organic product areas to improve existing processes. The position evolved into management responsibility for development of new process and manufacturing complexes.

ORGANIZATIONS

Center for Process Analytical Chemistry (CPAC), University of Washington
CPAC Is a NSF initiated-Industrial/University Cooperative Research Center (the Dow Representative to the CPAC Industrial Advisory Board, 1984- 1995)

- Organized effort In Dow Chemical to be a Charter member of CPAC; effectively leverage research activities and participate in benchmarking and partnering efforts as the organization expands to 40 sponsors. These sponsors represent a unique mix of the producing industry, instrument companies, National DOE Laboratories, and National Agencies (NSF, NIST, EPA). The Alliance with Perkin Elmer grew from this partnering atmosphere.

Directors of Industrial Research/Analytical Group (DIRAG) !985-1996

- Organized, within this group of analytical directors of industrial companies, an effort to foster partnering between industry and instrument companies to effectively develop new technology for the future. Expected reductions in research spending prompted this effort.

Analytical Laboratory Managers Association (ALMA)

- Organization of managers of industrial, university, government, and contract laboratories.

The American Chemical Society, Analytical Chemistry Division

Council for Chemical Research (CCR). A University of Washington representative to this organization of Industrial Research Directors and Academic Chemistry and Chemical Engineering Adminstrators.

COMMITTEES / BOARDS

Idaho National Engineering and Environmental Laboratory, Advisory Panel, Applied Engineering and Development Laboratory	1998- 2000
Argonne National Laboratory, Chemical Technology Division Advisory Board	1998- Present
Chairman, Scientific Advisory Board, National Thoroughbred Racing Association (NTRA) Committee on Integrity in Racing	1999- Present
Measurement Science Committee, *Vision 2020*, Road map for the US Chemical Industry	1996-2000
Battelle Pacific Northwest National Lab/Environmental Molecular Science Lab Advisory Board	1993-1998
Editorial Board, *Managing Modern Laboratories*	1994-Present
Scientific Board of International Forum for Process Analytical Chemistry (IFPAC)	1994-Present
Division External Advisory Board Los Alamos National Lab/Chemical Science & Technology Chairman (1997- 1999)	1994-1999
Los Alamos National Lab, Director's Committee of Division Chairmen	1997- 1999

Perkin Elmer, Real Time Systems Division Strategy and Management Boards	1993-1995
Chairman, CPAC Industrial Advisory Board	1991-1992
CPAC Steering Committee	1989-1995
University of Iowa, College of Pharmacy Advisory Board	1986-1990
Los Alamos National Laboratory Committee on Moisture In Mixed Waste	1999-2001

PUBLICATIONS/PATENTS/REPORTS

Koch, M. V.: "Industry-University Relationships: The Industrial Consortium." (Prepared for submission).

Assessment: Applicability of Recent Advances In Sensor and Control Technologies for Industrial Applications. Prepared for Sensors and Controls Program Office of Industrial Technologies, DOE, January 2001, page D-7.

Chemical Science and Technology Division (CST), Los Alamos National Laboratory. Review Committee Report. July 1999

Equine Drug Testing: An assessment of Current Practices and Recommendations for Improvement. The Scientific Advisory Committee to the Racing Integrity and Drug Testing Task Force of the National Thoroughbred Racing Association. May 1999.

Chemical Science and Technology Division (CST), Los Alamos National Laboratory. Review Committee Report. July 1998

Chemical Science and Technology Division (CST), Los Alamos National Laboratory. Review Committee Report. July 1997

Authored with A. Kwiram and J. Paden of The University of Washington and B. Halldorson of The Dow Chemical Company: "University-Industry Consortium Agreements, CPAC: A Case Study." Journal of Technology Transfer, Volume 20, Number 3&4 (December 1995).

Koch, M. V.: "Research Behind the Current Trends in Process Analysis." *Process Control and Quality* pp.-7, June 1994.

Co-authored with Ambrogio Magni: "Process for the Production of Serine Derivatives." UK Patent GB 2 051 790 B, March 9, 1983.

Koch, M. V.: Ph.D. Thesis, "Structure Activity Relationships of Norapomorphines" under the direction of Joseph G. Cannon, University of Iowa. *J. Med. Chem.*, 1968.

PRESENTATIONS

As Global Director for Dow Chemical Analytical Sciences and as Director of the Center for Process Analytical Chemistry, the University of Washington, delivered numerous talks and participated in workshops both internally and externally.

Topic: Process Analytical Management and Consortia Experience:

American Chemical Society, Analytical Division, invited talk	2001
DOE, Office of Industrial Technology Symposium, invited talk	2001
Instrumentation, Systems, and Analyzers workshop on sampling, talk	2000
Chemical Process Instrumentation Roundtable, invited talk	2000
American Chemical Society, Council for Chemical Research Symposium, talk	2000
TEKES, Finland, invited plenary lecturer	2000
Chemical Science Roundtable, invitation only workshop	1999
Dupont Chemical, Analytical Division Directors, invited talk	1999
FACSS Meeting, organized symposium and talked	1999
University of Padova, Italy, invited lecture	1999
NSF Workshop on Analytical Instrumentation for the Future, invited talk	1999
DOE, NSF, NIST Symposium on Measurement and Control, session leader	1998
International Forum for Process Analytical Chemistry, plenary talk	1998
NSF Industry/University Cooperative Research Center Director's Meeting, Invited talk	1998
Los Alamos National Laboratory Colloquium, invited talk	1997
DOE-Office of Industrial Technology Symposium, invited talk	1997
EPA Green Chemistry Award Symposium, invited talk	1997

PRESENTATIONS (Cont.)

National Research Council, invited talk " Industrial Progress towards the DOE Vision 2020"	1997
Tools for Environmental Monitoring, ACS symposium chairman	1996
Monsanto Chemical Company, invited talk "Leveraging the Laboratory Through Consortia"	1996
Dupont Chemical Company, invited talk " Leveraging the Laboratory Through Consortium"	1996
University of Melbourne, Australia, invited talk " Effective Use of Consortia for Environmental Remediation"	1996
National Research Council, invited paper, " Chemical Industry Needs in Process Control"	1996
Directors of Industrial Research/ Analytical Group, invited paper " Leveraging the Laboratory Through Consortia"	1996
Eastern Analytical Symposium, invited paper, "Leveraging the Research Laboratory via the use of Consortia"	1995
Council for Chemical Research, invited paper, "Research Centers, Help or Hindrance to Surviving in a Research Depleted Environment"	1995
Los Alamos National Laboratory, invited paper, "Effective Use of Consortia to Leverage Research Efforts"	1995
EPA, Public Forum on the Environmental Technology Initiative, "How Industry Could Better Utilize Process Analytical"	1994
Analytical Laboratory Managers Association, invited paper, "Ways to Leverage Research through Partnering and Consortia"	1994
Pittsburgh Conference, invited paper, "Future Needs of the Instrument Vendors"	1994
FACSS meeting, invited paper, "How to Effectively Leverage Research by Using Consortia"	1994
Dupont Chemical, invited talk to analytical mangers, "Managing an Analytical Organization"	1993
Pittsburgh Conference, invited paper, "Industry-University Research Relationships - The Industrial Consortium"	1993

PRESENTATIONS (Cont.)

Kuraray Chemical, Kurashiki, Japan, invited talk, 1990
"Managing a Modern Analytical Lab"

The University of Chicago, invited talk, 1989
"The Laboratory of the Future"

St. Olaf College, invited talk, 1987
"The Lab of the Future"

International Symposium on Automation Research, invited keynote address, 1987
"The Laboratory of the Future"

Funai Pharmaceutical, Hirakata, Japan, invited talk, 1986
"Managing an Analytical Laboratory"

Topic: Primarily Process Analytical:

National ACS Fall meeting, invited paper, 1994
"Design for the Environment: Process Analytical Chemistry"

International Anatech meeting, invited talk, 1992
"The Reasons Behind the Current Trends in Process Analysis"

Pharmaceutical Manufacturers Association, invited talk, 1990
"Process Control Using On-Line Analysis"

Gordon Conference Research in Analytical Chemistry, invited paper, 1988
"Challenges in Process Analytical Chemistry"

FACSS meeting, organized and chaired symposium regarding, 1987
"New Developments in Process Chromatography"

University of Washington Chemistry Department, invited lecture, 1986
"Process Analytical Used in Industry"

FACSS meeting, organized and chaired symposium regarding, 1986
"Process Analytical Chemistry and Fiber Optic Sensors"

Symposium on Innovations in Measurement Science, invited paper, 1986
"The Impact of Real Time Analysis on Process Optimization"

FACSS meeting, invited paper, 1985
"The Impact on Instrumental Analysis on Process Optimization"

Gordon Research Conference in Analytical Chemistry, invited paper, 1985
"The Impact of Chromatographic and Spectroscopic Analysis on Process Optimization"

PRESENTATIONS (Cont.)

Topic: Quality Programs and Operations:

National ACS Fall meeting, invited paper, "The Employment of Teams in Industry"	1993
Hewlett-Packard Instrument Company, invited talk, "Dow Analytical and R&D Objectives"	1993
Hewlett-Packard, invited talk to analytical managers, "Dow Analytical Expectations from Hewlett Packard"	1988
Analytical Laboratory Managers Association, invited paper, "Use of Good Laboratory Practices in Analytical"	1986

Topic: Presentations for Recruiting and Retaining Members/ Sponsors for the Center for Process Analytical Chemistry (CPAC), University of Washington

In 2001 talks were given to the following organizations:

Amgen, CA

Nalco, IL

Sintef, Norway

CPC, Germany

Nycomed Amersham, Norway

Dow Chemical, MI

Aventis, Germany

Systematix, WA

Norchip, Norway

Matforsk, Norway

Genotech, Norway

Neomed, Norway

Desotech, IL

PRESENTATIONS (Cont.)

Argonne National Lab, IL

Kimberly Clark, WI

Baxter Health Care, IL

S C Johnson Wax, WI

Norwegian Trade Association, Norway

UOP, IL

In 2000 talks were given to the following organizations:

Amgen, CA

Neles Automation, Finland

United Paper, Finland

Borregard, Finland

Matforsk, Norway

Aventis, Germany

Abbott, IL

Wacker, Germany

Neomed, Norway

Discovery Partners, CA

Selectide, AZ

In 1999 talks were given to the following organizations:

Novo Nordisk, Denmark

Searle, IL

Baxter Health Care, IL

Nycomed Amersham, Norway

PRESENTATIONS (Cont.)

Unilever, Netherlands

Merck, Germany

Eli Lilly, IN

Hoechst Marion Roussel, Germany

BASF, Germany

Bayer, Germany

EPA, D C

NIST, MD

NSF, VA

In 1998 talks were given to the following organizations:

Nabisco, NJ

Searle, IL

Air Products, PA

Lucent, NJ

Kimberly Clark, WI

S C Johnson Wax, WI

Baxter Health Care, IL

Nalco, IL

Velsicol, IL

Zellweger, IL

In 1997 talks were given to the following organizations:

Michigan Macromolecular Institute, Midland, MI

General Motors, Detroit, MI

PRESENTATIONS (Cont.)

BASF, Wyandotte, MI

Dow Corning, Midland, MI

Colgate-Palmolive, Piscataway, NJ

Honeywell, Minneapolis, MN

Fluor Daniels, Richland, WA

3M, St. Paul, MN

Allied Signal, NJ

General Electric, IN

Lockheed Martin, MN

In 1996 talks were given to the following organizations:

Pillsbury, Minneapolis, MN

General Mills, Minneapolis, MN

Cargill, Minneapolis, MN

Quaker Oats, Barrington, IL

Kraft General Foods, Chicago, IL

Hercules Chemical, Wilmington, DE

Rohm & Haas, Spring House, PA

Bristol Myers Squibb, Princeton, NJ

Hoechst Marion Roussel, Kansas City, KS

Colgate Palmolive, Piscataway, NJ

Nalco Chemical, Naperville, IL

W.R. Grace, Columbia, MD

Motorola, Rolling Meadows, IL

PRESENTATIONS (Cont.)

Baxter Health, Round Lake, IL

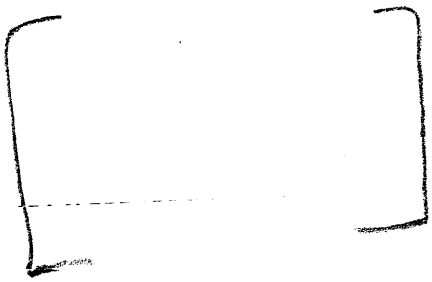
Abbott Laboratories, North Chicago, IL

Argonne National Laboratory, Argonne, IL

Weyerhaeuser, Federal Way, WA

Kimberly Clark, Neenah, WI

REFERENCES



MELVIN V. KOCH, Ph.D.

Residence: [redacted] Business [redacted]

PROFILE

Dr. Melvin V. Koch is the Director of the Center for Process Analytical Chemistry (CPAC) at the University of Washington, Box 351700, Seattle, WA 98195. He is active in coordinating developments in the field of process analytical technology between industry, government laboratories, and academia.

Dr. Koch joined the Dow Chemical Company in Midland, Michigan in 1967 and worked in the areas of Agricultural, Organic, and Pharmaceutical Process Research. In 1977, he transferred to Europe (Italy) to direct the Process Research Department for Dow Lepetit Pharmaceuticals. In 1980, he returned to Dow USA as laboratory director of the Midland Analytical Sciences Laboratory. He served as Global Director for Dow's Analytical Sciences prior to coming to the University of Washington in September 1995 as Director of CPAC's Interactive Program. In 1997 he was also appointed as Affiliate Professor of Chemical Engineering.

Research Interests: Process analysis , process research, process control, analytical instrumentation, technology development, technology transfer.

Education: 1962, BA (Chemistry, Mathematics), St. Olaf College, Northfield, MN; 1964, MS (Biochemistry), University of Iowa, Iowa City, IA; Ph.D. (Organic Medicinal Chemistry), University of Iowa, Iowa City, IA.

Committees/Boards:

- Idaho National Engineering and Environmental Laboratory, Advisory Panel, Applied Engineering and Development Laboratory — 1998- 1999
- Argonne National Laboratory, Chemical Technology Division Advisory Board — 1998- Present
- Measurement Science Committee, *Vision 2020,* Road map the US Chemical Industry — 1996-1999
- Battelle Pacific Northwest Lab/Environmental Molecular Science Lab Advisory Board — 1993-1998

- Editorial Board, *Managing Modern Laboratories* 1994-Present

- Scientific Board of International Forum for Process Analytical Chemistry (IFPAC) 1994-Present

- Division External Advisory Board 1994-1999
Los Alamos National Lab/Chemical Science & Technology
Chairman (1997- Present)